

**METHODS FOR MODULATING T CELL RESPONSES BY MANIPULATING  
INTRACELLULAR SIGNAL TRANSDUCTION****Abstract**

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Methods for modulating T cell responses by manipulating intracellular signals associated with T cell costimulation are disclosed. The methods involve inhibiting or stimulating the production of at least one D3-phosphoinositide in a T cell. Production of D3-phosphoinositides can be manipulated by contacting a T cell with an inhibitor or activator of phosphatidylinositol 3-kinase. Inhibitors of phosphatidylinositol 3-kinase for use in the methods of the invention include wortmannin and quercetin, or derivatives or analogues thereof. The methods of the invention can further comprise modulating other intracellular signals associated with costimulation, such as protein tyrosine phosphorylation, for example by modulating the activity of a protein tyrosine kinase or a protein tyrosine phosphatase in the T cell. Inhibition of a T cell response in accordance with the disclosed methods is useful therapeutically in situations where it is desirable to inhibit an immune response to an antigen(s), for example in organ or bone marrow transplantation and autoimmune diseases. Alternatively, stimulation of a T cell response in accordance with the disclosed methods is useful therapeutically to enhance an immune response to an antigen(s), for example to stimulate an anti-tumor response in a subject with a tumor, to stimulate a response against a pathogenic agent or increase the efficacy of vaccination. Novel screening assays for identifying inhibitors or activators of phosphatidylinositol 3-kinase, which can be used to inhibit or stimulate a T cell response, are also disclosed.

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